Increasing Utilization of Standardized Developmental Screenings

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Abstract

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Developmental screening provides a technique to identify abnormal growth and development in children as well as identifying opportunities for early medical intervention. This paper investigates the effects of utilizing standardized screening instruments in multiple settings to identify developmental concerns. Literature review demonstrates utilizing standardized screening tools in medical and community settings have succeeded in increasing evidence-based screening practices. Public health systems goals are focused on quality improvement measures that improve population health. State initiatives have been successful in implementing models of coordinated community based screening, assessment, and intervention approaches for young children. This paper concludes strategies should be implemented for standardized screening practices in all delivery settings to optimize the success of developmental screening opportunities.

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Introduction

Children deserve to be happy, healthy and reach their optimum level of health. Issues related to growth and development can interfere with this objective, consequently developmental screening plays a major role in ensuring children reach this goal. Research has demonstrated evidence-based practices such as utilization of standardized developmental screening instruments can effectively and efficiently identify 60 %-80 % more developmental delays as compared to relying on clinician impressions or informal screening tools. To improve individual health behavior choices related to screenings within the community, leaders in public health must identify causal effects related to obtaining routine developmental screenings. Identified factors related to health choices can then be addressed through partnerships between local medical professionals, community members, local government leaders, and public health leadership. These collaborative efforts at the local level can initiate advocacy movements based on the effects untreated delays have on the child and the family, the school, the community and the society. Protection of the public's health is based on preventative activities; screening for health concerns such as developmental delays has been proven to be beneficial for the child and family as well as cost effective to society (CDC, 2005). Public health leadership can play a vital role in improving the population's health by determining the needs of the community; partnering with stakeholders to develop strategies for ensuring quality health measures are implemented; and creating communities that are safe and promote healthy behaviors.

Multiple components that affect screening rates will be examined as well as opportunities for advocacy and policy change. Screening initiatives throughout the U.S. will also reveal new strategies in delivery of screenings. By identifying health concerns early,

children can be referred to specialists for further testing or to implement interventions, attributing to outcomes such as improved peer relationships, increased rates of school attendance, higher educational attainment, and decreased rates of mental and behavioral problems (Campbell, Lollar, & Chattopadhyay, 2006).

Research Objectives:

- Determine the effectiveness and efficiency of current primary care practices in identifying developmental delays in children
- Describe current practices being utilized in relation to identifying developmental delays
- Identify factors that can improve developmental screening practices
- Evidence of outcomes of improved performance for a child

Research Methodology

Basic methodology used for this research was qualitative with analysis of written documentation consisting of medical journal articles, public health websites and articles, and relevant medical websites and previously published reviews with the data compiled and analyzed in a systematic manner for summary of the findings. Reviewed data was relevant to the research objectives, both exploratory and descriptive findings, compiling this data into categories of sameness and analyzing for similarities and differences. Themes looked for in the literature review were logical reasoning, unbiased data, repeatability of studies or experiments, and objectivity of the data. Other literature methods reviewed included findings from mailed surveys **to** random samples of AAP members. Results were determined using a multivariate logistic/linear regressi**on** analyses **to** determine the associati**on** between standardized screening and the self-reported identificati**on** of children with **developmental** disabilities (Sand, Silverstein, Glascoe, Gupta, Tonniges, & O'Conner, 2005). A single prospective cohort study in the primary care setting was identified. A limited literature search

was conducted on key health technology assessment resources, including Medline, PsychInfo, and ERIC all on the Ovid platform, the Cochrane Library (Issue 3, 2009), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, EuroScan, PubMed, and a focused Internet search. Search data was limited to English language articles published between 2000 and 2010.

By researching multiple components associated with screenings such as practice guidelines, parent and practitioner perceptions and economic issues research investigation provides a clearer picture of the needs related to developmental screenings. Literature reviews used for this paper identified several types of studies for their meta-analysis evaluation. These include:

- practice guidelines on developmental surveillance and screening from professional organizations
- developmental screening tools in primary care settings
- surveys of physicians on their developmental surveillance and screening practices
- surveys of parents that included information about experiences related to screening or identification in primary care
- retrospective reviews or studies of identification patterns from referral clinics economic analyses of developmental screening

Literature Review

Approximately 17 % of children in the U.S. have some form of developmental or behavioral disability, however early intervention can limit disabilities associated with developmental delays (CDC, 2005). In an effort to improve health outcomes for children with developmental concerns the American Academy of Pediatrics (AAP) prompted the recommendation that all infants and young children be screened for developmental delays at

every well-child visit. By using formal, standardized screening tools at select age intervals (9, 18, and 24 or 30 months) and performing surveillance if concerns are raised by the parent or provider growth and development concerns can be consistently identified (Duby, Lipkin, Marcias, Wegner, Duncan, & Hagan, 2006).

A key note of the "Consensus Statement on Quality in the Public Health System" is the value of quality improvement measures and evidenced based practices to improve the public's health. Public health leadership is held accountable for workforce development and competency. Concepts related to epidemiology factors and individual health behaviors demand effective public health leadership that is capable of creating a culture of ethical standards in community settings. Leaders must be able to strategically evaluate the needs of the community based on their interpretation of data collection and interpret those findings (Council on Linkages). Public health leaders must be able to engage others to follow them in ideas and activities that promote improved population health. Effective skills in areas of decision making, emotional intelligence, assessment, developing and implementing programs and policy development are just a few of the essential skills necessary in effective public health leadership. Leadership must be able to navigate the political and legal arenas to attain public health goals. Methods to increase accountability of the public health system include oversight of value added quality improvement measures to improve the population's health (Consensus Statement, 2008).

This paper will demonstrate the health benefits to the child, family, and society when standardized screening practices are utilized consistently by practitioners. Health improvement outcomes related to improved communication skills, motor skills and behavioral skills warrant support by the public health system in ensuring delivery of the highest quality developmental screening techniques presently available to health professionals. Partnerships

between public health and stakeholders such as medical professionals, educational institutions, community members, and insurers have been very effective in bringing change to medical practice performance, driving changes in practice delivery of care approaches, and ultimately improving health care services for children (Earls & Hays, 2006). By identifying potential issues at earlier stages, children can receive interventions more effectively, supporting outcomes such as decreased rates of injuries that can result in emergency room visits and hospitalizations (Campbell, Lollar & Chattopadhyah, 2006). T*argeting interventions to improve children's health is a main focus in the development of* Bright Futures, a guide for practitioners on children's heath supervision. Bright Futures is a national health promotion program committed to the belief that every child deserves to be healthy and that a collaborative partnership between the parent, child, and physician as well as the community promotes a learning environment for the child and family. Considered the gold standard for children's health supervision, Bright Futures is an evidence-based training guide with "best practices" strategies that experimental research has shown to be effective at significantly impacting targeted health outcomes (Hotsetter, 2008). Outcomes include assisting the child to build appropriate social skills to function within society, teaching self help skills to encourage independence and fostering positive self esteem for children and adolescents (Hagan, Shaw, & Duncan, 2008). An ultimate goal of quality improvement in public health must be to optimize population health across all populations. A role of research is to supply meaningful data and academia for educating the workforce on critical components necessary to advance quality and fulfill this goal (Honoré & Scott, 2010). Between 12% and 16% of infants and children between the ages of 0-21 years have developmental disabilities, however early intervention can limit disabilities associated with developmental delays (Brown, Garfield, & Elam, 2007). However, less than 50 % of these children are identified as having a

problem before starting school. By this time significant delays may have already occurred and opportunities for treatment have been missed (Duby, Lipkin, Marcias, Wegner, Duncan, & Hagan, 2006). The AAP recommends three parental report tools that take just a few minutes to administer and accurately identify children with problems and developmental delays: the 10-question Parents' Evaluation of Developmental Status (PEDS); the Ages & Stages Questionnaires, and the Child Development Inventories (Hostetter M, 2008). These easy to use instruments successfully identify 70 to 80 % of children with problems (Regalado & Halfon, 2001). The Urban Institute reports clinical assessment without the use of standardized screening tools identifies less than 30 % of children with developmental disabilities, while reliable screening tools correctly identify such children at least 70 % of the time (Barreto & Inkelas, 2010). Although less than 50 % of pediatricians report using standardized screening tools, many delays are subtle and may not be identified by surveillance alone, therefore demonstrating the importance of physicians following AAP recommendations (Sices, Feudtner, McLaughlin, Drotar, & Williams, 2003).

Projects such as the Colorado "Assuring Better Child Health & Development" (ABCD) seek to raise awareness of developmental issues and the role screenings play in identifying delays and initiating treatments. Goals of ABCD projects are to increase awareness of developmental delays while promoting utilization of standardized screening tools throughout states (Earls & Hays, 2006). These practices will aid in early identification and referral of children with developmental issues and thus assist children in reaching their maximum developmental potential (Bennett, Kennedy & Blake, 2010).

Even though these findings are encouraging, health disparities face many members of the population. The population benefits from strong public health leadership who possess leadership skills that can initiate change that improves the health of the population through

stakeholder collaboration, empowering staff and community members through service or advocacy, and leads the community to a higher state of health.

An investigative study on the effects of validated screening tools in pre-term children demonstrated that the pre-term children were approximately two times more likely to be eligible for early intervention programs than term children, but that many of these children are being missed due to inadequate standardized screening at well-child visits (Marks, Hix-Small, Clark, & Newman, 2009). The CDC estimates that the cost of providing services to one year's cohort of newborns who are disabled due to hearing loss will equal $2.1 billion in services over their lifetimes (Nelson, 2009).

Health care professionals have the most effective developmental screening tools available for use but fail to screen children consistently and routinely due to complaints of staff shortage, time constraints and reimbursement issues (Sand, Silverstein, Glascoe, Gupta, Tonniges, & O'Conner, 2005). The lack of training in the use of specific tools is one of the barriers identified by practitioners in the utilization of developmental screening tools (Sices, 2007). Two goals established by the CDC are to develop and test community-based model programs in primary care settings, and potentially other settings that care for young children and to increase health care practitioners' knowledge and skills in developmental screening by incorporating developmental screening training into professional health care training (CDC, 2005). By following the example of states that have incorporated the ABCD project into their communities, local and state public health maternal and child health branches can implement training opportunities for nurses, practitioners, social workers, and other public health staff on correct administration and scoring of AAP approved developmental instruments (Earls & Hays, 2006).

The significance of early detection and referral of potential developmental delays has driven meta-analysis literature review as well as quasi-experimental research to assist

medical professionals in determining 1) if standardized screening tools can identify increased numbers of developmental delays, and 2) which tools are recommended for best practice utilization in both primary care and community settings. By and large, research findings demonstrate that by using screening tools that are standardized, reliable, valid and practical in the office setting, developmental delays could be detected and interventions started at an earlier stage, resulting in improved outcomes for the child (Aly, Taj, & Ibrahim, 2010).

Data supports the utilization of standardized developmental screenings tools but fails to identify needed actions to ensure all children receive these screenings. Initiatives that focus on increasing delivery of screenings throughout communities in the U.S. have experienced increased numbers of children being screened with more children being referred for potential delays (Earls & Hays, 2006).

Many children fail to seek routine medical care in through primary care settings therefore missing opportunities for screening with standardized screening tools and identification of potential delays. Healthy People underscores that the "health of the individual is almost inseparable from the health of the larger community" (Koh, 2010) and recognizes the social determinants of health, i.e., the social, political, and economic forces that impact population health (Honoré, & Scott, 2010).

Leadership at the local level has the opportunity to interact directly with the public through activities such as the Community Health Assessments to determine what health issues are important to the public. Public health agencies can assist families in accessing low or no-cost health services and refer children into Healthy Babies and Toddlers and Early Intervention (EI) programs which provide case management of the child's growth and development. By developing partnerships with community and state stakeholders, public health can lead local initiatives involving media, local government leaders and the medical community to educate the population on risk factors associated with developmental delays,

the importance of screenings and access to screening opportunities and intervention treatments in the community setting (Turnock, 2009).

In theory utilization of a developmental instrument that has specific parameters for each developmental growth component appears a logical preference for identifying developmental delays more effectively. Screening tools with developmental growth components that have parameters to identify specific abilities of children will identify areas of concern in the majority of children. States such as Rhode Island, North Carolina and Colorado participated in Assuring Better Child Health and Development (ABCD) initiative projects that promoted developmental screening awareness and encouraged partnerships with community agencies to administer screenings. The outcomes in each state demonstrated increased numbers of children received screenings and greater numbers of children were referred for potential delays (Jana, 2009).

Risk Factors Contributing to Developmental Delays

Risk factors for developmental problems fall into two categories: genetic and environmental. Children are placed at genetic risk by being born with a genetic or chromosomal abnormality. Genetic or chromosomal abnormalities such as Down syndrome or Fragile X syndrome and other disorders put a child at risk for developmental delays (My Child without Limits, 2011). Environmental risk results from exposure to harmful agents either before or after birth, and can include things like poor maternal nutrition, exposure to toxins such as lead, or infections that are passed from a mother to her baby during pregnancy (such as measles or HIV). A child born prematurely that faces severe poverty, mother's depression, poor nutrition, or lack of care is at increased risk for developmental delays due to their environment (My Child without Limits, 2011). Risk factors have a cumulative impact upon development. As the number of risk factors increases, a child is put at greater risk for developmental delay (Leslie, Bargallo, Gordon, Hayden-Wade, McDaniel, Lui, Pearson, &

Gist, 2008). One of public health's essential services is to link people to needed personal health services and assure the provision of health care when otherwise unavailable (Turnock, 2009). Increasing access to developmental screening through non-conventional community settings offers families more screening opportunities while removing access barriers (Reuland & Bethell, 2006).

Benefits of Performing Developmental Screenings

A survey of American Academy of Pediatrics (AAP) members revealed that despite publication of the 2001 policy statement "Developmental Surveillance and Screening of Infants and Young Children" and national efforts to improve developmental screening in the primary care setting, few pediatricians use effective means to screen their patients for developmental problems (Duby, Lipkin, Marcias, Wegner, Duncan, & Hagan, 2006). The AAP provides an algorithm as a strategy to support health care professionals in developing a guide for best practice (Duby, Lipkin, Marcias, Wegner, Duncan & Hagan, 2006), (the algorithm is located in Appendix A).

Many children are born with risk factors that predispose them to developmental disorders while other children will have issues related to specific medical conditions. Since benefits of developmental screening offer opportunities for early therapeutic intervention with better prognosis of the mental, physical and behavioral functioning for the child, standardized screening is recommended for all children (Duby, Lipkin, Marcias, Wegner, Duncan, & Hagan, 2006). Benefits include:

- Using standardized screening tools offers confirmation to the parents their child is developing at the rate anticipated (Earls & Hays, 2006).
- Adherence to evidence based practices (Hostetter, 2008)

- Validation of the child's developmental status for the medical professional (Earls & Hays, 2006).
- Promotes public health goals to prevent developmental growth problems through preventative measures. Developmental delays, learning disorders, and behavioral and social-emotional problems are estimated to affect 1 in every 6 children (Dunkle, 2004).
- Assists in identifying children at younger ages, thus initiating referrals into Early Intervention programs prior to start of school. Only 20% to 30% of children with developmental delays are identified as needing help before school begins (Institute of Medicine, 2000). Intervention prior to kindergarten has huge academic, social, and economic benefits. Studies have shown that children who receive early treatment for developmental delays are more likely to graduate from high school, hold jobs, live independently, and avoid teen pregnancy, delinquency, and violent crime, which results in a savings to society of about $30,000 to $100,000 per child (Glascoe & Shapiro, 2004).
- By incorporating developmental surveillance and screening into preventive health care visits, the practitioner has the ideal opportunity to offer anticipatory guidance to the family and thus support the child's development (Duby, Lipkin, Marcias, Wegner, Duncan, & Hagan, 2006). By increasing screenings in community settings such as daycares and preschool trained staff can assist in reaching more children at risk for developemtal delays.
- Increased opportunities will inevitably increase the numbers of children being screening. Research has revealed significant benefits to early recognition and intervention, especially for certain conditions. For example, children with autism who are identified early in life and receive specialized interventions

have significantly improved cognitive, language, and motor skills and attain a higher level of education than do autistic children who are identified later in life (Nelson, 2009).

Barriers to Administering Screenings

A randomized study conducted by the AAP in 2000 found over 50 % of the pediatricians surveyed agreed the top five barriers to administering developmental tools in a practice setting were 1) practitioner time to conduct the screens, 2) coding and billing issues, 3) rate of reimbursement, 4) lack of office staff to perform the screens, and 5) lack of training on using a standardized screening tool (Halfon, Hochstein, Sareen, O'Connor, Inkelas, & Olson, 2001). Other provider identified barriers included lack of, or perceived lack of, assessment and treatment resources (Earls & Hayes, 2008). Barriers identified for the child and family include cost of screening related to cultural barriers, language barriers, economically disadvantaged families, and lack of parental knowledge on the benefits of developmental screenings (Halfon, Hochstein, Sareen, O'Connor, Inkelas, & Olson, 2001). Structural barriers that interfere with identifying delays include the recommended ten health supervision visits from birth to age 2 but at age 2 screenings are performed annually (Sices, 2007). Opportunities to monitor a child's development consequently decrease significantly after age 2, even though increasingly complex language, social interactions, and understanding start to emerge (Sices, 2007).

Cost to Society

Economic and social burden of developmental disabilities is great. The poor health and social outcomes of children with developmental disabilities result in excess medical, education, and criminal justice system costs for families, employers, and communities.

Lifetime direct and indirect costs for persons born in 2000 with developmental disabilities were estimated to equal $51.2 billion for persons with mental retardation, $11.5 billion for persons with cerebral palsy, $2.1 billion for persons with hearing loss, and $2.5 billion for persons with vision impairment (all figures in year 2003 dollars) (Honeycutt, Dunlap, & Chen, 2004). Indirect costs for the developmentally disabled person include the value of productivity losses in the workplace and household because of premature death, inability to work, or limitation in the amount and type of work that can be performed (Honeycutt, Dunlap, & Chen, 2004). Annual spending on special education programs totals approximately $36 billion (Brown, Garfield & Elam, 2007). Standardized screenings can reduce these costs if developmental concerns are identified early and medical interventions are initiated quickly (Cutler & Gilkerson, 2002).

Risks Associated with Screenings

Risks associated with screening for developmental delays and disabilities include the possibility of a negative influence on the parent's perception of their child, the added time and costs associated with screening and the risk of false-positives which can produce anxiety and subject the child and parent to unneeded tests and evaluations. Research has found that false-positive rates can reach 15 % to 30 % for developmental screening (Swensen, Birnbaum, Secnik, Marynchenko, Greenberg, Claxton, 2003). However, some research has found children with false-positives perform substantially lower than do children with true-negative scores on measures of intelligence, language, and academic achievement indicating that while these children do not have a developmental disability they may nonetheless benefit from further assessment and referral to services such as Head Start and specialized day care (Swensen, Birnbaum, Secnik, Marynchenko, Greenberg, Claxton, 2003).

Partnership Opportunities

Available data suggest that many, if not most, opportunities to identify young children with developmental delays are missed (Sices, 2007). Evidence based research is needed to determine ways to improve the utilization of screening tools by health professionals. Community partnerships can build support for training workshops for daycare workers, school nurses, child advocacy agencies and public health home visiting staff on screening techniques to promote increased screenings and greater identification of possible concerns. Projects such as Colorado's ABCD Project has achieved an increase from 5 to 60 % more pediatricians in the state now using a standardized developmental screening tool as a routine component of the well child visit (Reuland & Bethell,2006). Through education and training many community partners offered screening opportunities to the population. Outcomes of this project provided a strengthened partnership between child care centers, health care partners, referral partners and other community stakeholders. Education offers empowerment as demonstrated by a childcare provider noted in the Colorado project:

> *"ASQ and ASQ: SE has been a very useful tool to our parents and our teachers. After initially screening all the students, we are using screening as part of our enrollment package. This has proven useful to our teachers in knowing more about the level of development of each child and the parents have been interested to know what they can do at home to help their child as well."* Childcare Provider, Arapahoe County, (Bennett, Kennedy, & Blake, 2010).

Other ABCD projects across the nation have been instrumental in improving delivery of developmental screenings to the population. In North Carolina, prior to implementing an ABCD project, the average developmental screening rate for children across Medicaid systems was approximately 15.3% (Earls & Hays, 2006). The NC project goals included improving relationships between providers and parents while increasing developmental screening rates. North Carolina screening rates have increased from less than 20 % to more

than 85 % in areas using ABCD with more families receiving counseling even though their child was not identified with delays, therefore promoting a better understanding of normal development (Earls & Hays, 2006). Due to the success of this project, in 2004 Medicaid implemented a new screening policy requiring a standardized screening tool to be used at the six, 12, 18 (or 24), 36, 48, and 60 month well-child visits and provide documentation on the claim form for reimbursement (Earls & Hays, 2006).

Public Health's Support of Policy Change

Public health systems can accelerate the dissemination and implementation of evidence-based practices by supporting evidence-based practices and rationales to health professionals that include tools, training, and technical assistance on developmental screening guidelines (Honoré & Scott, 2010). A prominent goal of the public health system at all levels is to have continuous evaluation of public health practices, programs and policies that produce and promote desired results while giving significant additional attention to those areas that need to be improved (PHQF, 2008).

Data and inspiration are not enough to make policy change occur; a vision, a plan and partners can move agendas forward in the legislative arena. Margaret Dunkle, with the Center for Health Services Research and Policy at George Washington University, understands the importance of seeking policy change for developmental screenings. Her team met with both Republican and Democratic committee staff members about the importance of developmental screening and explored ways to assure that federal funds support only high-quality screening tools. Not surprisingly, this was a new topic to most. Yet, across the political spectrum, congressmen were receptive and offered important insights about how to frame a compelling case and identify legislative windows of opportunity to state their case. Community leaders, county leaders and state leaders can learn techniques from partners who

are familiar with legislative activities that can promote policy change in areas such as healthcare delivery (Dunkle, 2006).

Strategies to Improve Screening Rates

Strategies such as the ABCD initiatives in NC and Colorado and legislative presentations such as Margaret Dunkles' identify opportunities for public health to collaborate with other stakeholders and develop plans for policy development related to evidence based quality measures for screening practices (Consensus Statement, 2008). Stakeholders such as private practitioners, hospitals, developmental specialists, parents, school nurses, public health nurses and leaders, local government leaders and media all must come to the table to plan awareness and implementation strategies for recommended screening guidelines. Increasing the routine use of standardized developmental screening tools in multiple community settings is a huge undertaking that involves many partners working together.

Effective strategies have been implemented in ABCD projects across the U.S. and require consideration by public health leaders when exploring a screening initiative.

Strategy #1: Involve public health leaders and community stakeholders and investigate what other local child advocacy groups such as EI may be exploring related to screening issues and invite them to the planning table to avoid duplicating efforts (Zieker, 2009).

Strategy #2: Target culturally and linguistically appropriate outreach to community-based organizations and other institutions for outreach education and screening opportunities (Zieker, 2009).

Strategy #3: Investigate how local health care providers and health care partners incorporate developmental screening processes into their settings by evaluation of screening practices within the community; identify local practitioners screening and referral processes

and the impact on children and their families; and brainstorm on ideas and resources to ensure a successful implementation plan that will increase the routine use of standard development screening tools and improve the referral processes (Zieker, 2009).

Strategy #4: Leverage the strengths and assets of community partners through identification of stakeholders and opponents. Identify potential opposition concerns and be prepared to counter these as needed. Local communities can promote changes and develop solutions by working collaboratively with identified partners who also bring multiple perspectives and assets to the table. Whenever possible, it is beneficial to align with existing coalitions in order to leverage the communities' strengths and assets (Zieker, 2009).

After reviewing the study titled "Identifying Infants and Young Children with Developmental Disorders in the Medical Home: An Algorithm for Developmental Surveillance and Screening" found that special needs are often first identified when young children participate in day care programs (Duby, Lipkin, Marcias, Wegner, Duncan, & Hagan, 2006). Caregivers may be the first to detect a child's speech, vision, or hearing problems or to identify concerns related to a cognitive, emotional, or physical handicap even though the child has received routine healthcare since birth. Local public health nursing staff, health educators and home visit staff can lead in community networking and training programs focused on promoting partnerships with childcare agencies to offer access to affordable screening opportunities.

In North Carolina, the success of the ABCD program, which promotes use of developmental screening in primary care, has led to statewide implementation of the program. A state partnership with three Community Care Network programs implemented education and training for developmental screenings (Earls & Hays, 2006). The Medicaid program has adopted requirements for structured developmental screening using tools as part of a bundled set of preventive health services for children. Research on the effect of such

public policy initiatives on detection rates and outcomes, as well as funding to promote successful programs in other communities, is needed (Jana, 2009).

Surry County Practitioner Education Initiative

Based on the literature findings this author assisted in developing a plan to investigate how local pediatric health care practitioners in private and public settings within her county incorporate developmental screening procedures into their practice settings. Funding for the project is provided by the NC Maternal and Child Health Division as a component of the Innovative Approaches (IA) grant for 2010-2012. Goals of the screening project are:

- To determine what, if any, barriers face the primary care practitioners in administering developmental screenings
- To identify screening tools being utilized in the office setting
- Assist primary care practices in adhering to the AAP recommendations by providing education and screening tools

Initial project activities included visits to eleven primary care practices with education provided by a public health nurse on Bright Futures guidance, Ages & Stages screening tool, PEDS screening tool, and the Autism screening tool. All practices were utilizing the PEDS tool with three practices supplementing this screening tool with the Ages & Stages screening questionnaire. Time constraints, limited staffing and poor reimbursement were the top three choices for failing to follow the AAP recommendations. Bright Futures guidelines were introduced to practices with over 50 % of practitioners relating no prior knowledge of the guidance. All questionnaires have not been tabulated at the present time to determine overall use of the standardized tools. (Provider Survey is located in Appendix B). Based on these findings and the literature review recommendations, standardized screening instruments should be implemented in all healthcare settings that are presently delivering screenings.

Due to the barriers that face many families related to access of health services, other strategies for administering developmental screening should be investigated by public health leaders as well. Daycares and housing authorities can offer opportunities to screen children who may not utilize a primary care setting. Referral resources should be identified and actions to ensure identified delays are referred effectively are an important component of this recommendation.

Conclusion

Increased use of standardized developmental screening tools by health professionals and other trained community members will inevitably lead to increased identification of developmental delays in young children. Planning and resource provisions are needed to ensure that sufficient services will be available to meet the needs of identified children and families. Continued support and investment in development of public health programs that improve communication and collaboration between practitioners, early intervention staff, educational programs, and developmental delay specialists are needed. These models will address the concerns reported by practitioners concerning the lack of, or perceived lack of, referral resources for children with developmental delays.

Each of the three criteria selected for priority quality improvement measures within public health systems demonstrates capacity for improving population health. Health impact can be demonstrated through documentation, improvability criteria through documentation of the possibility for changes in a given area and practice variability investigates the gaps and lack of standardization that potentially influence impacts and improvements (Honoré & Scott, 2010).

Two of the priority areas for quality improvement are pertinent to developmental screening recommendations for medical professionals. Public health's goal of bridging research and practice and institutionalizing evidence-based approaches to achieve results-based accountability can be linked to evidence based developmental screening guidance and lead to a standardized delivery of care for screenings within all medical institutions. Standardized developmental screening has been proven by the AAP as an effective and safe practice that can be used by practitioners. Public health development and analysis processes and advocacy is needed to ensure that this evidence based practice is integrated into policymaking to improve identification of growth and development issues in population health.

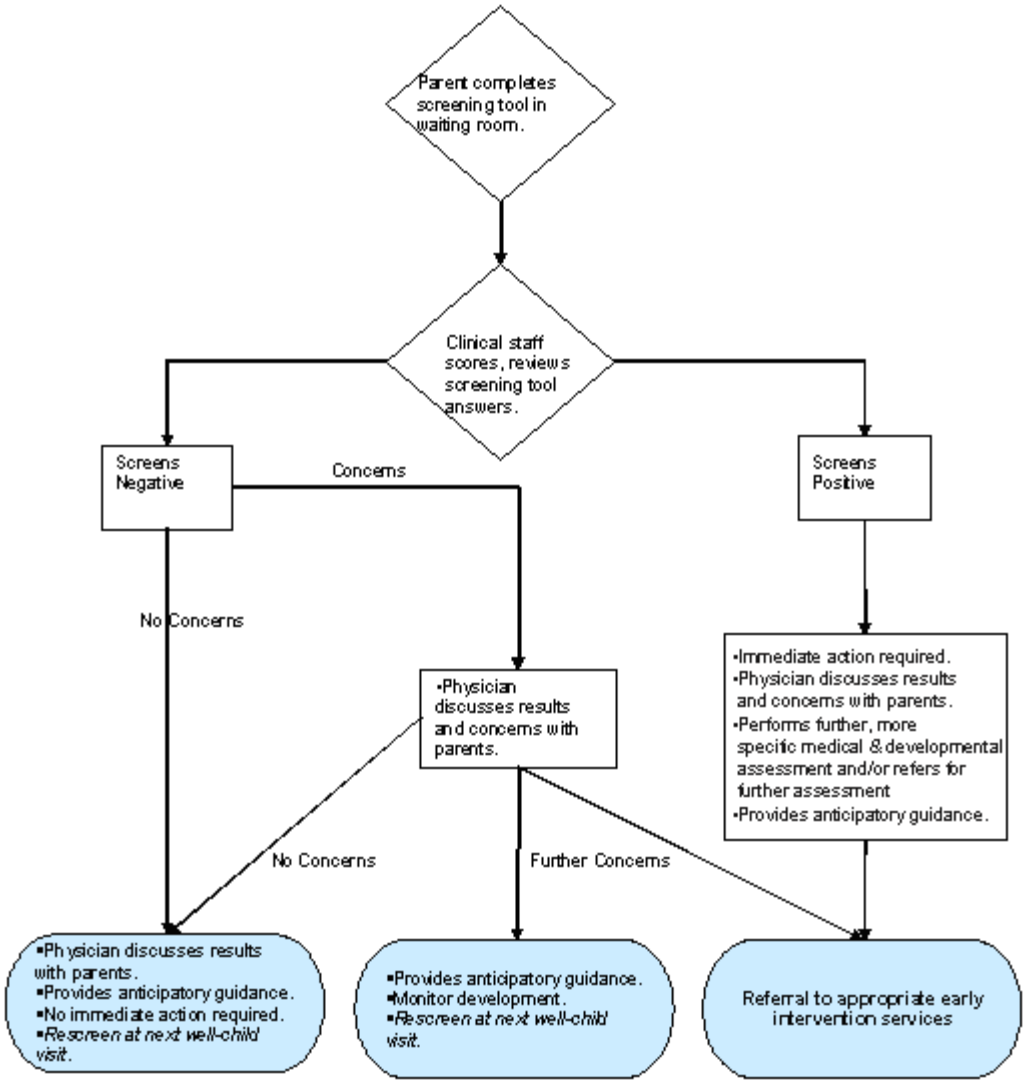
Based on the literature review findings developmental screening recommendations for utilizing standardized screening tools at all periodic visits and with identified concerns offer the optimal opportunity for children with delays to be identified. Recommendations by the AAP for utilizing evidence based standardized developmental screenings at all periodic visits supports public health's measurement of performance and quality improvement goals for improved population health outcomes. These evidence based practices can also allow practitioners, public health nurses, school nurses and other healthcare professionals performing screenings to identify potential delays in a more systematic and effective method when implemented consistently. Lack of identification of developmental delays related to poor screening techniques or no history of standardized screenings justifies the recommendation of increasing screening opportunities for children in an effort to detect increased numbers of delays and start interventions earlier for the child.

Research has effectively demonstrated developmental delays identified at early stages of occurrence respond better to interventions and save thousands of healthcare dollars per year. Medical professionals appear to be in agreement on the benefits reaped for children and families related to developmental screening with standardized screening instruments as noted in ABCD projects across the nation. These projects also support community setting screening sites as a benefit in increasing children's developmental screenings. Quality improvement

measures for improving population health based on research and evidence based practices can institutionalize standardized developmental screenings throughout the U.S. Strategies such as ABCD initiatives should be examined for public health systems support. Children with delays identified and treated early can experience the improved health benefits of independence, improved communication skills, higher cognitive functioning, and the ability to be a more productive member of society.

Appendix A Developmental Screening Algorithm for Primary Care

Pediatric Developmental Screening Flowchart



Practice

Cited: The Role of the Primary Health Care Provider in Children's Developmental Health: Developmental Screening for Health Care Providers (2005).

Appendix B INNOVATIVE APPROACHES PROJECT
PRIMARY CARE PROVIDER SURVEY
DEVELOPMENTAL SCREENING SURVEY

Surry County Health and Nutrition Center has been awarded an INNOVATIVE APPROACHES grant from the Child and Maternal Health Division of the state of North Carolina. The purpose of the project is to strengthen the capacity of Surry County healthcare systems to support the early development of the special needs population. We need your help to better understand the needs of health care providers such as yourself in meeting the developmental needs of your young patients. Your response is confidential. The survey takes about 5 minutes to complete. Thank you for completing this survey. **Please circle all the responses that apply**.

1. Your primary practice is:
   a. Privately owned
   b. Hospital based
   c. Other _____

2. The providers in the practice include:
   a. Family Practice providers
   b. Pediatricians
   c. Family Nurse Practitioners
   d. Residents/fellows
   e. Physician Assistants

3. How many primary care providers (including NP or PA) are in the practice?
   a. One
   b. Two
   c. Three to six
   d. Greater than six

4. Does your practice assess for developmental delays based on AAP's *Bright Futures*?
   a. Yes
   b. No
   c. Not familiar with *Bright Futures*

5. How many patients are registered in your office for well child examinations in a week?
   a. Less than 20
   b. 21-40
   c. 41-60
   d. Over 60

6. As an individual, what is the average number of patients you assess for developmental delays per month?
   a. Less than 10
b. 11- 29 c. Over 30

7. How do you assess your patients for developmental delays?
   a. Observation
   b. Maternal history
   c. Physical examination
   d. Standardized Screening Tool

If you answered "d" for question 7, which standardized tool(s) do you utilize? (Circle all that apply)

   a. Ages and Stages (ASQ)
   b. Prescreening Developmental Questionnaire (PDQ)
   c. Parent's Evaluation of Developmental Status (PEDS)
   d. Other instrument_____

Why do you prefer this tool(s)? _____

8. What is the **greatest barrier** in your practice to fully utilizing a standardized screening tool?
   a. Lack of staff training on tools
   b. Lack of time
   c. Lack of office staff
   d. Lack of consensus on use
   e. Lack of referral options for concerns
   f. Language barriers
   g. None

9. When you decide to refer, what resources do you utilize most?
   a. Case Management
   b. Early Intervention (Part C Infant & Toddler Connection)
   c. CAP-C or CAP-MR-DD
   d. Child Development (CDSA)
   e. Specialty Providers (Orthopedics, Neurology, ENT, etc.)
   f. Home Visiting Programs: Care Coordination CC4C (formerly CSC) or CCNC (Community Care of North Carolina)
   g. Preschool Part B or Head Start
   h. Mental Health Services
   h. Other_____

10. What resources do you need for your practice to be more effective in providing developmental screenings to your patients?
   a. Standardized screening tool instruments for implementation (Ex: Ages & Stages Kit)
   b. Training for office staff on administering and scoring the standardized screening tool being used
   c. Reimbursement Issues with billing/coding for the screening
   d. Other_____

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